2N®

SmartGate UMTS

UMTS + GSM gateway

User guide

Version 1.1.0

www.2n.cz

The 2N TELEKOMUNIKACE a.s. joint-stock company is a Czech manufacturer and supplier of telecommunications equipment.

The product family developed by 2N TELEKOMUNIKACE a.s. includes UMTS/GSM gateways, private branch exchanges (PBX), and door and lift communicators. 2N TELEKOMUNIKACE a.s. has been ranked among the Czech top companies for years and represented a symbol of stability and prosperity on the telecommunications market for almost two decades. At present, we export our products into over 120 countries worldwide and have exclusive distributors on all continents.

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2N TELEKOMUNIKACE administers the FAQ database to help you quickly find information and to answer your questions about 2N products and services. On faq.2n.cz you can find information regarding products adjustment and instructions for optimum use and procedures „What to do if...".

CE

Declaration of Conformity

2N TELEKOMUNIKACE a.s. hereby declares that the 2N® EasyRoute product complies with all basic requirements and other relevant provisions of the 1999/5/EC directive. For the full wording of the Declaration of Conformity see the CD-ROM enclosed and at www.2n.cz.

2N TELEKOMUNIKACE is the holder of the ISO 9001:2000 certificate. All development, production and distribution processes of the company are managed by this standard and guarantee a high quality, technical level and professional aspect of all our products.

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1 Product Overview

In this section, we introduce the **2N® SmartGate UMTS** product, outline its application options and highlight the advantages following from its use. This chapter also includes safety instructions.

Here is what you can find in this section:

- Product Description
- Manual changes description
- Abbreviations, Terms and Pictograms Used.

1.1 Product Description

Basic Features

- The primary purpose of 2N® SmartGate UMTS is to transmit voice between UMTS/GSM network and attached phone terminals. You can connect terminal with FXO interface (trunk line of PBX, phone set, answering machine etc.) to FXS interface on 2N® SmartGate UMTS (connector with phone icon) and terminal with FXS interface (extension line of PBX) to FXO interface on 2N® SmartGate UMTS (connector with crossed out phone icon).
- You can establish data connections (HSPA, UMTS, EDGE, GPRS, CSD) and send/receive SMS using 2N® SmartGate UMTS in combination with a PC and appropriate software.
- You can send an SMS to a pre-programmed number using the SMS sending input.
- Version of SmartGate UMTS with Battery backup allows the function in case of power failure.

Advantages of 2N® SmartGate UMTS use

- **Call cost cutting** – the calls are routed to UMTS/GSM or analog network according to their number prefix. Route all UMTS/GSM calls from PBX to 2N® SmartGate UMTS to save a lot on PSTN – UMTS/GSM calls.
- **Easy installation** – you can easy program 2N® SmartGate UMTS as you need with enclosed SW.
- **You get all you need in the delivery** – your 2N® SmartGate UMTS delivery contains all you need to operate the system (the power supply adapter, telephone cables, PC serial cable, SMS input connector, CD-ROM with software).
- **Solution for sites without telephone lines** – such as mountain chalets, exhibitions, conferences, etc.
- **DialThru technology** – all your calls will be routed most cost-effective way.
- **ME – Mobility Extension** – you newer miss an incoming call from analog network. Incoming call will ring on connected phone and on your mobile phone too.
- **CLIP** - 2N® SmartGate UMTS is equipped with the FSK-based CLIP feature, so if a terminal capable of receiving the CLIP is used you know the caller‘s number.
- **SMS sending input** – simply send an SMS to a pre-programmed number by closing the contact. Recommended for easy supervision, simple securing, etc.
- **Radiation hazard minimization** – you are not exposed to a direct effect of the antenna RF electromagnetic field while telephoning as opposed to mobile telephones.

Safety Precautions

Do not switch on 2N® SmartGate UMTS in the vicinity of medical apparatuses to avoid interference. The minimum distance of the antenna and pacemakers should be 0.5m.

Do not switch on 2N® SmartGate UMTS aboard of a plane.

Do not switch on 2N® SmartGate UMTS near petrol stations, chemical facilities or sites where explosives are used.

Any mobile telephone use prohibition based on RF energy radiation applies to 2N® SmartGate UMTS too.

2N® SmartGate UMTS may disturb the function of TV sets, radio sets and PCs.

Warning! 2N® SmartGate UMTS contains components that can be swallowed by small children (SIM card, antenna, etc.).

The voltage value mentioned on the adapter may not be exceeded. If you connect 2N® SmartGate UMTS to another power supply, make sure that the voltage value is in the acceptable range.

When your 2N® SmartGate UMTS comes to the end of its operational life, dispose of it in accordance with applicable regulations.

1.2 Changes

Manual Version	Amendments to Earlier Versions
1.0.0	The User Manual for SmartGate UMTS.
1.0.1	Corrected errors in text
1.0.2	US version included
1.1.0	Version with module SIM5320 added

Caution

- The manufacturer continuously meets customer requirements by improving the firmware. For the latest 2N® SmartGate UMTS processor firmware, programming tool and User Manual see www.2n.cz.
- For a detailed description of the 2N® SmartGate UMTS firmware upgrade refer to the section devoted to the PC programming tool.

1.3 Terms and Symbols Used

Manual Symbols

Safety

- **Always** abide by this information to prevent persons from injury.

Warning

- **Always** abide by this information to prevent damage to the device.

Caution

- **Important information** for system functionality.

Tip

- **Useful information** for quick and efficient functionality.

Note

- Routines or advice for efficient use of the device.

Future functions

Grey marked text in this document specifies functions of **2N® SmartGate UMTS** , which will be supported in the future.

2 Description and Installation

This section describes the**2N® SmartGate UMTS** product and its installation.

Here is what you can find in this section:

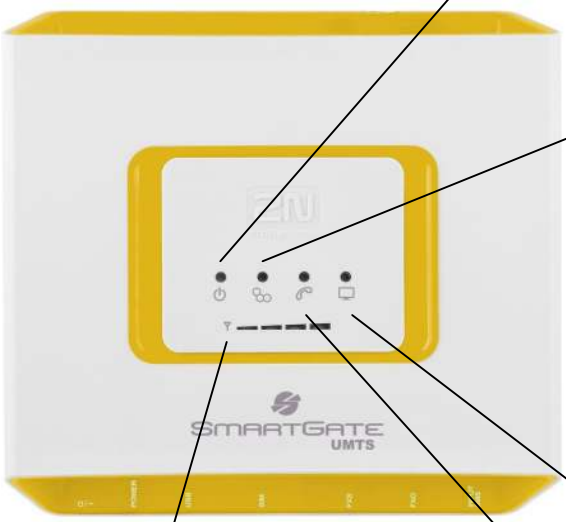
- Product Description
- Before You Start
- Mounting
- Telephone line connection
- SMS Sending Input connection

2.1 Description

Packing of 2N® SmartGate UMTS contains UMTS/GSM gateway in white plastic cover, power supply, antenna and cables for connecting phone interfaces and PC

2N® SmartGate UMTS's status is indicated by LED diodes on its front side. All possible states are described in the following figure.

Figure 2.1
2N® SmartGate UMTS LED indicators



Power supply

Light blue	2N® SmartGate UMTS is powered from the grid.
Light yellow	2N® SmartGate UMTS is powered from the battery.
Flashes 1x in 2s	HW error, contact the manufacturer
No light	HW error, contact the manufacturer

UMTS/GSM network

Light blue	Registered to UMTS/GSM
Flashes:	
1x in 1s	not registered, SIM card inserted
1x in 3s	not registered, SIM card not inserted
4x quickly	enter your PIN
8x quickly	enter your PUK
Quickly continuously	All functions are blocked. Your SIM doesn't correspond to the operator lock.

Data — device connected to PC

No light	no data transmission
Light yellow	data transmission

Signal strength/baterry indicator

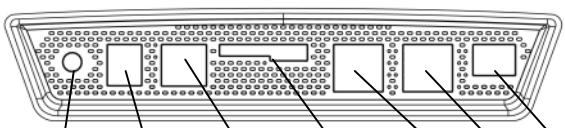
Steady state – signalization of signal strenght

FXS line off hook – signalization of battery state (battery backup type only)

Telephone line

No light	Standby
Orange for FXS interface:	
Flashes quickly	line off-hook or ringing
Light	call FXS - UMTS/GSM
Green for FXO interface:	
Flashes quickly	line off-hook or ringing
Light	call FXO - UMTS/GSM
Alternately oragne and green:	
Quickly	ringing from FXO is connected to FXS interface
Slowly	call FXS - FXO

Figure 2.2
2N® SmartGate UMTS Connectors



Switch ON/OFF

Power supply connector (DC Jack 2.1 mm)

USB (USB B)

SIM

Telephone line FXS interface (RJ 12, 6/2)

Telephone line FXO interface (RJ 12, 6/2)

SMS connector SMS sending input

Telephone Line Tones – Operational Tones

The UMTS/GSM gateway sends tones to the telephone line to indicate the line status. The tone frequency is 425 Hz in initial setting. Frequency is programmable; it is possible to set up double frequency tones.

Dial tone

- continuous or morse A — ——
- 2N® SmartGate UMTS is ready to receive dialing.

Ringing tone

- Only ——— ———
- The called subscriber's telephone is ringing.
- The UMTS/GSM network or connected PBX transmits this tone. For connection to UMTS/GSM network is possible to generate this tone in Gateway according to setting. This tone is generated till the UMTS/GSM network starts to transmit Ringback tone.

Busy tone

- — — — — —, programmable cadency

In case of call routing to UMTS/GSM network 2N® SmartGate UMTS generate busy tone in any of the following cases:

- The SIM card has not been installed.
- 2N® SmartGate UMTS is not registered to UMTS/GSM network.
- 2N® SmartGate UMTS is registered into a foreign network but roaming is disabled.
- The called subscriber line is busy.
- The called subscriber hangs up (disconnection).
- The called number has too many digits (more than 30).
- The called number is barred.

In case of call routing to SmartGate UMTS's FXO interface 2N® SmartGate UMTS generate busy tone in any of the following cases:

- Line is not connected. There is no current on the line.
- The called number has too many digits (more than 30).
- The called number is barred.
- If the called subscriber line is busy or called subscriber hangs up, busy tone is generated by PBX.

Dialing end signaling

- Only –
- Dialing reception has been terminated. Connection is being established.

PIN tone

- ---- ---- ----
- Enter the PIN code.
- This tone is transmitted upon power up if the PIN has to be entered manually.

PUK tone

- -------- --------
- Enter the PUK code.
- This tone is transmitted upon repeated wrong PIN entering attempts. SIM card is blocked.

Telephone Line Tones – Programming Mode

Tones confirming/refusing the values entered are transmitted during telephone line based programming. Each tone has a different melody.

Confirmation

- ♪♪
- Confirms that the service password or parameter number entered is correct and has been accepted.

Refusal

- ♪♪♪♪♪
- Incorrect parameter number;
- Incorrect parameter value
- Transmitted when a parameter is cancelled with a #.

Saving

- ♪♪♪
- Parameter value entered is correct and has been saved

2.2 Before You Start

Product Completeness Check

Check the product for completeness before installation please:

- 1× 2N® SmartGate UMTS
- 1× Magnetic Antenna with coax cable
- 1× Supply adapter
- 2× Telephone Cable
- 1× PC-connection USB cable
- 1× SMS sending input connector
- 2× Dowel
- 2× Screw
- 1× CD-ROM with User Manual and software[1)]
- 1× Quick Installation Guide

Note

- [1)] **Enclosed software:**
  2N® SmartGate PCManager
  2N® SmartGate SMS gateway for easy SMS sending and receiving
  2N® SmartGate UMTS Driver for PC
  User Manual in PDF format

Installation requirements

- 2N® SmartGate UMTS is designed for vertical mounting on suspension holes (use the mounting pattern). This position is the best for signal reception because a vertical antenna is used. 2N® SmartGate UMTS can be operated in the horizontal position too where the UMTS/GSM signal is good.
- Install 2N® SmartGate UMTS with respect to the UMTS/GSM signal strength – check the signal strength using the PCManager.
- Place 2N® SmartGate UMTS out of range of sensitive devices and human bodies for electromagnetic interference reasons.
- For the allowed range of operating temperatures refer to the "Technical Parameters".
- 2N® SmartGate UMTS can disturb other telecommunication systems. Place phone lines and connected terminals and PBX's faraway from antenna.
- It is impossible to operate 2N® SmartGate UMTS on sites exposed to direct solar radiation or near heat sources.

- 2N® SmartGate UMTS is designed for indoor use. It may not be exposed to rain, flowing water, condensed moisture, fog, etc.
- 2N® SmartGate UMTS may not be exposed to aggressive gas, acid vapours, solvents, etc.
- 2N® SmartGate UMTS is not designed for environments with high vibrations such as means of transport, machine rooms, etc

Caution

- Check that you have everything needed for 2N® SmartGate UMTS start-up (SIM card, analogue phone set or FXO port of PBX, eventually PC etc.)

2.3 Mounting

External Antenna Connection

Screw the antenna cable into the SMA antenna connector.

Caution

- Tighten the antenna connector **gently with your hand** – never use wrenches!

Note

- For the best signal level fix the antenna in vertical position.
- Use signal strength indicator to find best place for antenna.

SIM Card Installation

Slot for SIM card is placed on the connector panel. Insert the SIM card to the slot with contacts oriented to the front panel. Make sure that the card is locked properly.

Cautions

- Make sure that the UMTS/GSM provider's SIM card is compatible with the UMTS/GSM network supported by your 2N® SmartGate UMTS version.
- Select the required UMTS/GSM provider and SIM card services, such as call forwarding, call barring, preferred networks, SMS service centre, etc. in your mobile phone **before inserting your SIM card in 2N® SmartGate UMTS**.

Power Supply Connection

2N® SmartGate UMTS is fed with 10-16V DC. Where a source other than the included power supply adapter is used, the voltage range and polarity have to be maintained. See technical parameters.

2N® SmartGate UMTS with battery option allows to support functionality in case of power failure. For backup use four pieces of accumulators NiMh size AA. These accumulators are not part of delivery. Put the accumulators to the battery holder on the bottom side under the cover prior to installation. Polarity of accumulators is marked inside of the battery space.

Warning

- **Do not activate the power supply** until the antenna is connected to 2N® SmartGate UMTS to avoid the UMTS/GSM module damage.

- For backup use only suggested type of accumulators NiMh size AA. Only this type of storage batteries is permitted for use!.**When another type of batteries is used, there is a danger of damage of device or even explosion!**
- **The battery should never be placed in municipal waste. Please check local regulations for disposal of batteries.**

2.4 Telephone line connection

DialThru gateway – basic connection

Phone set is normally connected to extension line of PBX. Wire up 2N® SmartGate UMTS between phone set and PBX. Link extension line of PBX to FXO interface and phone set to FXS interface on SmartGate UMTS.

If FXO interface of 2N® SmartGate UMTS is connected directly to PSTN, you can connect only equipment that is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC to FXS port.

Gateway for extension line of PBX

Link free extension line of your PBX to FXO interface on SmartGate UMTS. FXS interface remains unconnected.

Gateway for trunk line of PBX

Link free trunk line of your PBX to FXS interface on SmartGate UMTS. Program PBX to route all UMTS/GSM calls to SmartGate UMTS. Incoming calls from UMTS/GSM network will be routed to PBX.

You can connect a standard telephone, answering machine or any other FXO-interface terminal to SmartGate UMTS. Outgoing calls from phone will be routed to UMTS/GSM network, incoming calls from UMTS/GSM will ring on the phone.

2N® SmartGate UMTS is equipped with the FSK-based CLIP and so it is advantageous to connect a terminal that is able to display or process the CLI. You must activate the function on SmartGate UMTS.

Tip

- 2N® SmartGate UMTS is equipped with the FSK-based CLIP and so it is advantageous to connect a terminal that is able to display the CLIP.

Gateway for both, trunk and extension, lines of PBX

2N® SmartGate UMTS is very flexible thanks to his three routing tables. You can connect trunk and extension lines of one PBX to proper connectors on SmartGate UMTS. You can program the complex as follows: outgoing calls from PBX will be routed through trunk line to UMTS/GSM network. Incoming calls from UMTS/GSM will be routed to extension line of PBX. This configuration is suitable for PBX's with no capability of dial-in on trunk lines.

2.5 SMS Sending Input Connection

You have got a special connector for easy connection to SmartGate UMTS. The connector is equipped with screwing clamps to connect wires from a switching contact (device to be monitored). The other connector end can be connected to the respective 2N® SmartGate UMTS panel connector.

The input is designed for the contact of relay connected between the input pins. The input is activated by contact closing (pin interconnection).

A transistor switch or logic signal can be used too. The pin near the telephone line connector is connected to GND of the device the second one is active. Please, respect the loop current polarity. There is over-voltage protection up to +12V DC there.

3 Configuration 2N® SmartGate UMTS

This section describes configuration of the product **2N® SmartGate UMTS**.

Here is what you can find in this section:

- PC Connection to 2N® SmartGate UMTS
- 2N® SmartGate UMTS Parameter Programming
- Table of Parameters

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3.1 2N® SmartGate UMTS parameters configuration

PC Connection

You have got a USB cable for PC connection.

Caution

- Make sure that a longer cable works properly to avoid errors at high transmission rates.

2N® SmartGate UMTS Parameter Programming

Most of SmartGate UMTS's parameters have such default values that meet most users' demands and need not be changed. Usually you have to program routing tables according to 2N® SmartGate UMTS usage. There are two possibilities how to program SmartGate UMTS:

- Use phone line and DTMF programming from connected phone set. This is not applicable for all parameters
- Use a PC with the PCManager installed. Using this way all parameters supported by 2N® SmartGate UMTS can be programmed.

Telephone Line based Programming

1. Hook off the telephone, you can hear the dial tone or the busy tone, and the Line LED starts flashing.
2. Enter the service password (12345 by default, can be changed) with the DTMF; to cancel a wrong password hang up before sending the * character. To confirm password enter a *.
3. If you have entered a correct password, you hear the confirmation tone. If not, the dialed number may be sent to the UMTS/GSM network as a call. To prevent this, hang up when you do not hear the confirmation tone.
4. 2N® SmartGate UMTS shall remain in the programming mode until hang-up.
5. Enter the number of the parameter to be programmed and press a *. If the parameter number is correct, you can hear the confirmation tone, if not, you get the refusal tone and can re-enter the parameter number.
6. When the parameter number is confirmed, enter the allowed parameter value and press a *. If the parameter value is in the allowed range, you can hear the saving tone, if not, you get the refusal tone. You can enter another parameter number in either case.

Numeric parameters are programmed using numbers in units included in the parameter description. The step for setting must be respected. For parameters with different setting are values defined in the parameters description (in parenthesis).

To cancel any programming step in the programming mode, press a #. Having done so, you can hear the refusal tone and can enter a new parameter number. Parameters are saved when the saving tone is transmitted. Hang up to quit programming.

During phone line programming mode is the LED 'UMTS/GSM Network' showing the signal strenght

Example:

Dial	Confirmation	Description
1 2 3 4 5 *	♪♪	Password entering, OK
1 0 *	♪♪	Transmission volume parameter, OK
3 *	♪♪♪	Set to medium level, saved
5 5 *	♪♪♪♪♪	Non-existent parameter number, refusal

PC based Programming

For programming, connect 2N® SmartGate UMTS to a PC with a USB cable and make sure that the 2N® SmartGate UMTS PCManager is installed. Programming is intuitive and easy. All items and parameters are accompanied with texts hints - just point at anything with the mouse cursor.

2N® SmartGate UMTS data uploading and storing, including firmware upgrade, are executed in a special mode, in which 2N® SmartGate UMTS waits for about 3s after power up (all LEDs are on). If instructed so by the PCManager during this timeout, 2N® SmartGate UMTS remains in this mode as long as it is necessary. If 2N® SmartGate UMTS is not reset after the PCManager is terminated, switch the system off and on again.

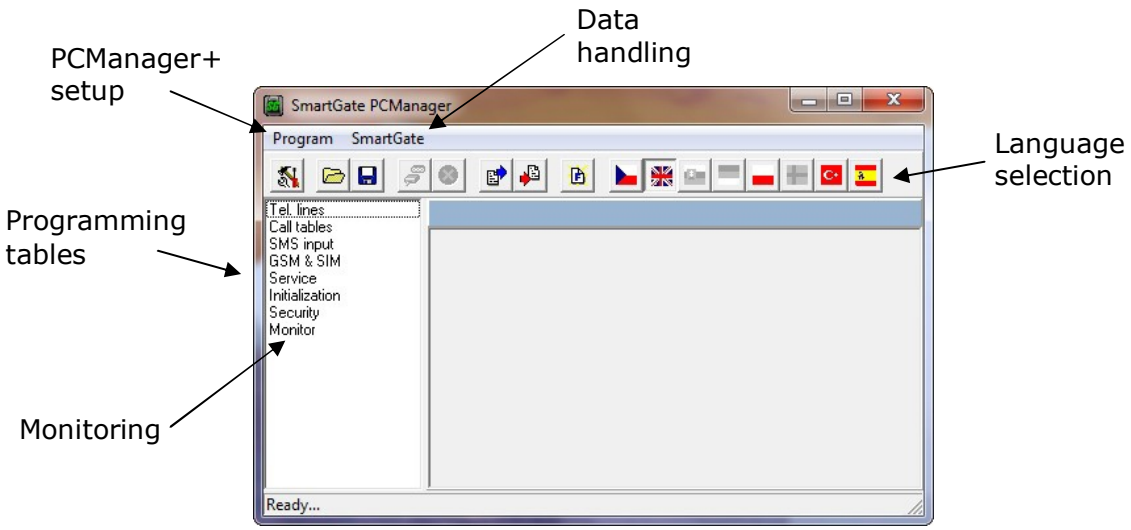


Figure 3.1
Basic screen of SmartGate UMTS PC Manager+

Installation and setting of SmartGate PCManager (Win7)

1. Connect 2N® SmartGate UMTS to the PC using USB connection. SmartGate must be switched off.
2. After connecting is the virtual serial port in PC installed automatically. I case, that the port doesn't install automatically and unknown device is detected, install drivers by using file: Drivers/win/CDM20814_Setup.exe.
3. Find the number of virtual port using Device manager. Look at setting of COM ports and find port marked as ***USB Serial Port(COMn).***
4. Install PCManagerSmG from CD.
5. Run SmartGate PCManager, select the language on the upper bar.
6. In menu ***Program*** select ***Setup.*** Set the COM port – local and select COM port number according information from point 3.

Using of PCManager - basic

1. The main purpose of PCManager is setting of configuration and upgrade firmware of SmartGate.
2. When the configuration in SmartGate should be changed, the configuration must be first loaded from SmartGate, than edited using PCManager and finaly loaded back to SmartGate.
3. The groups of parameters are listed is in the left window of the program. All parameters are described in next part of this manual. There is interactive help in PCManager for all parameters.
4. When you start with any operation which needs communication with SmartGate, the gateway must be switched to special programming mode. PCManager will show you the demand to switch the gateway off and on to set it to this mode.

Further Data Handling Options

In addition to the 2N® SmartGate UMTS memory, settings can be saved in a PC file and reloaded into the PCManager. This is recommended for backing up of current configuration

Caution

- The table Security includes the PIN code and service password. These parameters have a special handling. They are not saved in a PC file for security reasons. If you load a PC file into the PCManager and then into SmartGate UMTS, the PIN and service password should not change unless you change them manually before saving.

Caution

- All tables are filled-in with default values after PCManager start. It is recommended to load data from 2N® SmartGate UMTS before parameters programming and saving. If you only save data after PCManager start, all parameters except the PIN and service password in the 2N® SmartGate UMTS memory will have default values.

Caution

- The PIN and service password can only be modified either manually or by full initialization.

Monitoring

Monitoring is active when 2N® SmartGate UMTS is in operation and registered to the UMTS/GSM network. If 2N® SmartGate UMTS is not registered to UMTS/GSM, the USB port is blocked and no monitoring can be made.

This simple informative function helps you identify:

- The UMTS/GSM module type and IMEI ID;
- The SIM card IMSI ID and selected SMS service centre necessary for SMS sending;
- The UMTS/GSM provider's name and signal strength received by 2N® SmartGate UMTS - this information helps you find the optimum signal location (the information is updated in 10s intervals);
- The 2N® SmartGate UMTS line status – standby, outgoing call, incoming call including telephone number. The COM is locked during dialing and incoming call ringing, so the PCManager reports COM blocking.

Firmware Upgrade

The manufacturer responds to clients' requirements with periodical firmware updating. The current 2N® SmartGate UMTS firmware, PCManager and User Manual are available on www.2n.cz. The latest firmware version is always included in every new PCManager installation.

Upgrading procedure:

1. Run the PCManager, select the language for displaying texts on the right-hand side.
2. In menu ***SmartGate*** use ***Upgrade.*** When the gateway is not in programming mode, you will be instructed to switch the gateway on and on.
3. If there is more then one file in the PCManager directory, chose one of them. The upgrade takes place automatically. **Do not switch your PC or 2N® SmartGate UMTS off during the process of upgrading!**

Caution

- The PCManager checks the software version in 2N® SmartGate UMTS and the upgrade file. If the version in the file is new, everything is all right. An identical or earlier software version is stored in 2N® SmartGate UMTS too but the PCManager requires confirmation to be on the safe side.

Caution

- The manufacturer responds to clients' requirements with periodical firmware updating. The latest 2N® SmartGate UMTS firmware, PCManager and User Manual are available on www.2n.cz.

3.2 Table of Parameters

All programmable parameters are listed in this section. Each parameter is accompanied with the unit used, function number (if avaliable) for programming via a telephone line, description of SmartGate UMTS's behavior, setting options, setting step and default (initialization) value.

Numeric parameters must be set in unit listed in the parameter description. For parameters with different setting are values defined in the parameters description (for phone line programming in parenthesis). When phone line programming is used, character can't be included in the string, because it is dedicated for confirmation of the new parameter value.

Telephone interface FXS parameters

Dialing parameters

Type of dialing **Function No.: 100**

Select the dialing type to be received by 2N® SmartGate UMTS on the FXS interface. 2N® SmartGate UMTS accepts only the selected type of dialing, ignoring the others.

Setting options: *DTMF (0) -2N® SmartGate UMTS receives tone dialing only.*
Pulse (1) -2N® SmartGate UMTS receives pulse dialing only

Default setting: *DTMF*

Time to dial [s] **Function No.: 101**

Timeout during which 2N® SmartGate UMTS waits for further digits to be dialed. It starts to establish connection when this timeout passes.

Setting options: *1-255 s*

Setting step: *1 s*

Default setting: *5 s*

Minimal On Hook [ms] **Function No.: 102**

The minimum line current break that 2N® SmartGate UMTS evaluates as hang-up.

Setting options: *100-25500 ms*

Setting step: *100 ms*

Default setting: *500 ms*

Beep after dialing end **Function No.: 103**

Select a beep to signal the end of dialing (beginning of outgoing call establishing).

Setting options: *YES(1)/NO(0)*
Default setting: *YES*

Signaling

Line reversal indication for call in progress Function No.:110

Select call in progress signaling by telephone line polarity reversal on FXS interface. There is voltage of reversed polarity on the telephone line during the whole call.

Setting options: *YES(1)/NO(0)*
Default setting: *NO*

Tariff pulse when call starts/ends Function No.: 111

Signaling of call start or end by tariff pulse.

Setting options: *None (0)-2N® SmartGate UMTS doesn't send tariff pulse as signaling of callstart/end.*
Call end (1) -2N® SmartGate UMTS sends tariff pulse when call ends.
Call start (2)-2N® SmartGate UMTS sends tariff pulse when call starts.
Call start and end (3) -2N® SmartGate UMTS sends tariff pulse when call starts and ends too.
Default setting: *None*

Tariff pulse frequency Function No.: 112

Tariff pulse frequency setting.

Setting options: *16 kHz (0) -2N® SmartGate UMTS transmits 16 kHz tariff pulses*
12 kHz (1)-2N® SmartGate UMTS transmits 12 kHz tariff pulses
Default setting: *16 kHz*

Tone settings

Dial tone – Double frequency tone[Hz] Function No.: -

Parameter can be set for all three types of tone (Dial tone, Busy tone,Ringbacktone). This parameter is intended for switching between single tone and double tone setting. When the parameter is set, the second frequency of appropriate tone must be set too. When this parameter isn't set, the second frequency is automatically set to the same value, which results in single tone generation. This parameter can't be set using phone line programming. When the phone line programming is used for frequency change, both tones must be set (for single frequency to the same value).

Setting options: *YES/NO*
Default setting: *NO*

Dial tone – frequency 1[Hz] Function No.: 120

Setting of frequency 1 of dial tone. This tone is generated after Off-Hook in case 2N® SmartGate UMTS is ready to accept dialing.

Setting options: *1-3400 Hz*
Setting step: *1 HzD*
efault setting: *425 Hz*

Dial tone – frequency 2[Hz] Function No.: 121

Setting of frequency 2 of dial tone.

Setting options: *1-3400 Hz*
Setting step: *1 Hz*
Default setting: *425 Hz*

Dial tone - cadence Function No.: 122

Dial tone cadence setting.

Setting options: *Continuous (0) -2N® SmartGate UMTS generate continuous dial tone*
Morse A (1) -2N® SmartGate UMTS generate dial tone with 330/330/660/660 ms timing
Default setting: *Continuous*

Busy tone – frequency 1[Hz] Function No.: 123

Setting of frequency 1 of busy tone.

Setting options: *1-3400 Hz*
Setting step: *1 Hz*
Default setting: *425 Hz*

Busy tone – frequency 2[Hz] Function No.: 124

Setting of frequency 2 of busy tone.

Setting options: *1-3400 Hz*
Setting step: *1 Hz*
Default setting: *425 Hz*

Busy tone - cadence Function No.: 125

Busy tone cadence setting.

Setting options:
330/330 ms (0) *-cadence 330 ms tone, 330 ms pause*
200/200 ms (1) *-cadence 200 ms tone, 200 ms pause*
250/250 ms (2) *-cadence 250 ms tone, 250 ms pause*
375/375 ms (3) *-cadence 375 ms tone, 375 ms pause*
500/500 ms (4) *-cadence 500 ms tone, 500 ms pause*
Default setting: *330/330 ms*

Ring back tone – frequency 1 [Hz] Function No.: 126

Setting of frequency 1 of ringback tone. This tone is send after dialing end, before UMTS/GSM network starts to generate its own Ringback tone.

Setting options: *1-3400 Hz*
Setting step: *1 Hz*

Default setting: *425 Hz*

Ringback tone – frequency 2 [Hz] Function No.: 127

Setting of frequency 2 of ringback tone.

Setting options: *1-3400 Hz*
Setting step: *1 Hz*
Default setting: *425 Hz*

Ringback tone - cadence Function No.: 128

Ringback tone cadence setting.

Setting options:
OFF (0) -not generated, only network tone
1000/4000 ms (1) -cadence 1 s tone, 4 s pause
400/200/400/2000 ms (2) -cadence 2x400 ms tone, 2 s pause
1500/3500 ms (3) -cadence 1,5 s tone, 3,5 s pause
2000/4000 ms (4) -cadence 2 s tone, 4 s pause
Default setting: *OFF*

Tone after disconnection Function No.: 129

If the remote subscriber hangs up first, the 2N® SmartGate UMTS subscriber can hear the tone selected here.

Setting options: *Busy (0)-2N® SmartGate UMTS transmits the busy tone upon call end.*
Permanent (1) -2N® SmartGate UMTS transmits the permanent tone upon call end.
Default setting: *Busy tone*

Volumes

Transmission volume Function No.: 190

Volume setting for UMTS/GSM transmission with a 4 dB step.

Setting options: *1-5*
Setting step: *1*
Default setting: *3 = medium volume level*

Reception volume Function No.: 191

Volume setting for UMTS/GSM reception with a 4 dB step.

Setting options: *1-5*
Setting step: *1*
Default setting: *3 = medium volume level*

Ringing signal settings

Ringing signal – frequency [Hz] Function No.: 140

Ringing signal frequency setting.

Setting options: *25 / 50 Hz-2N® SmartGate UMTS rings with 50 or 25 Hz on FXS interface*

Default setting: *50 Hz*

Ringing signal - cadence Function No.: 141

Ringing signal cadency setting.

Setting options: *1000/4000 ms (0) - 1 s ring, 4 s pause*
400/200/400/2000 ms (1)- 400ms ring, 200ms pause, 400ms ring, 2s pause
1500/3500 ms (2) - 1,5 s ring, 3,5 s pause
2000/4000 ms (3) - 2 s ring, 4 s pause

Default setting: *1000/4000 ms*

CLI transmitting Function No.: 148

Set this item to enable/disable identification of a telephone line calling from a UMTS/GSM network. The function can be enabled if you have a device on your telephone line that is capable of receiving FSK according to ETSI standards.

Setting options: *Disable (0) - 2N® SmartGate UMTS does not transmit the CLI.*
FSK during ringing (1) -2N® SmartGate UMTS transmits the FSK-based CLI according to the ETSI EN 300 659 standard (transmission during ringing).

Default setting: *Disable*

Replace character + in CLI by Function No.: 149

If this parameter is filled, the + character in the international prefix of CLI is replaced by the defined string. The + character can neither be transmitted by the FSK protocol nor dialed by the DTMF from a terminal.

Setting options: *0-4 characters (0-9,*,#)*

Default setting: *blank*

„BabyCall" – Automatic call

BabyCall number Function No.: 180

A number to be dialed for the automatic call function. If this item is blank, the function is disabled.

Setting options: *0-20 characters (0-9,*,#,+)*

Default setting: *blank*

BabyCall timeout [s] Function No.: 181

Time between line Off-Hook and automatic call beginning (if enabled). During this timeout 2N® SmartGate UMTS waits for dialing that cancels the automatic call. You can make standard call if the BabyCall function is enabled.

Setting options: *0-255 s*

Setting step: *1 s*

Default setting: *0 s*

Telephone interface FXO parameters

Dialing parameters

Number of rings before Off-Hook Function No.: 200

If 2N® SmartGate UMTS is programmed as FXO gateway, parameter sets the count of rings before Off-Hook.

Setting options: *1-255*
Step: *1*
Default setting: *1*

Timeout for dialing end recognize [s] Function No.: 201

If 2N® SmartGate UMTS is programmed as FXO gateway, parameter defines timeout during which 2N® SmartGate UMTS waits for further digits to be dialed. It starts to establish connection when this timeout passes.

Setting options: *1-255 s*
Setting step: *1 s*
Default setting: *5 s*

Time for dialing start Function No.: 202

If 2N® SmartGate UMTS is programmed as FXO gateway, parameter defines timeout for first dialing digit. After timeout 2N® SmartGate UMTS hangs up the line.

Setting options: *1-255 s*
Step: *1 s*
Default setting: *15 s*

Beep after dialing end Function No.: 203

If 2N® SmartGate UMTS is programmed as FXO gateway, parameter enables a beep to signal the end of dialing (beginning of outgoing call establishing).

Setting options: *YES(1)/NO(0)*
Default setting: *YES*

Type of transmitted dialing Function No.: 204

Set type of dialing for automatic dial-in from UMTS/GSM and for dialing during outgoing call from FXS interface.

Setting options: *DTMF (0)-2N® SmartGate UMTS transmits tone dialing-for future use*
Default setting: *DTMF*

Minimal On-Hook [ms] Function No.: 205

Parameter defines minimal time of line On-Hook between calls. Set the parameter longer then duration of FLASH on your PBX.

Setting options: *100-25500 ms*
Step: *100 ms*
Default setting: *1500 ms*

Maximal Off-Hook without dialing [s] Function No.: 206

Parameter defines maximal time of line Off-Hook before dialing to FXO interface during outgoing call from FXS interface. Set up shorter time then timeout from extension line Off-Hook and dialing receiver disconnection on your PBX. In this case PBX usually changes dial tone to busy tone. If defined timeout passes before dialing, 2N® SmartGate UMTS shortly hangs up, after that Off-hooks again and then dials.

Setting options: *1-255 s*
Step: *1 s*
Default setting: *15 s*

Signaling

Busy tone detection Function No.: 210

Set number of busy tone periods for detection of call disconnection from your PBX. The "0" setting disables busy tone detection.

Setting options: 0-255

Step: 1

Default setting: 4

Continuous tone detection [ms] Function No.: -

Set duration of constant frequency continuous tone for detection of call disconnection from your PBX. The "0" setting disables continuous tone detection.

Setting options: 0-8900 ms

Step: 35 ms

Default setting: 2030 ms

Tone settings

Dial tone – Double frequency tone[Hz] Function No.: -

Parameter can be set for all three types of tone (Dial tone, Busy tone, Ringbacktone). This parameter is intended for switching between single tone and double tone setting. When the parameter is set, the second frequency of appropriate tone must be set too. When this parameter isn't set, the second frequency is automatically set to the same value, which results in single tone generation. This parameter can't be set using phone line programming. When the phone line programming is used for frequency change, both tones must be set (for single frequency to the same value).

Setting options: *YES/NO*
Default setting: *NO*

Dial tone – frequency 1[Hz] Function No.: 220

Setting of frequency 1 of dial tone. This tone is generated after Off-Hook in case 2N® SmartGate UMTS is ready to accept dialing.

Setting options: *1-3400 Hz*
Setting step: *1 HzD*
efault setting: *425 Hz*

Dial tone – frequency 2[Hz] Function No.: 221

Setting of frequency 2 of dial tone.

Setting options: *1-3400 Hz*
Setting step: *1 Hz*
Default setting: *425 Hz*

Dial tone - cadence Function No.: 222

Dial tone cadence setting.

Setting options: *Continuous (0) -2N® SmartGate UMTS generate continuous dial tone*
Morse A (1) -2N® SmartGate UMTS generate dial tone with 330/330/660/660 ms timing
Default setting: *Continuous*

Ring back tone – frequency 1 [Hz] Function No.: 226

Setting of frequency 1 of ringback tone. This tone is send after dialing end, before UMTS/GSM network starts to generate its own Ringback tone.

Setting options: *1-3400 Hz*
Setting step: *1 Hz*
Default setting: *425 Hz*

Ringback tone – frequency 2 [Hz] Function No.: 227

Setting of frequency 2 of ringback tone.

Setting options: *1-3400 Hz*
Setting step: *1 Hz*
Default setting: *425 Hz*

Ringback tone - cadence Function No.: 228

Ringback tone cadence setting.

Setting options: *OFF (0) -not generated, only network tone*
1000/4000 ms (1) -cadence 1 s tone, 4 s pause
400/200/400/2000 ms (2) -cadence 2x400 ms tone, 2 s pause
1500/3500 ms (3) -cadence 1,5 s tone, 3,5 s pause
2000/4000 ms (4) -cadence 2 s tone, 4 s pause
Default setting: *OFF*

Volumes

Transmission volume Function No.: 190

See FXS interface parameters.

Reception volume **Function No.: 191**

See FXS interface parameters.

„BabyCall" – Automatic call

BabyCall number **Function No.: 280**

If 2N® SmartGate UMTS is programmed as FXO gateway, parameter defines a number to be dialed for the automatic call function. If this item is blank, the function is disabled. If only character '#' is included, after BabyCall timeout elapsed the interfaces FXO and FXS are connected and dialing to PSTN over FXO interface is possible.

Setting options: *0-20 characters (0-9,*,#,+)*
Default setting: *blank*

BabyCall timeout [s] **Function No.: 281**

If 2N® SmartGate UMTS is programmed as FXO gateway, parameter defines time between line Off-Hook and automatic call beginning (if enabled). During this timeout 2N® SmartGate UMTS waits for dialing that cancels the automatic call. You can make standard call if the BabyCall function is enabled.

Setting options: *0-255 s*
Setting step: *1 s*
Default setting: *0 s*

Mobility extension FLASH

Mobility Extension FLASH DTMF code **Function No.: 240**

Fill in DTMF code to enable GSM FLASH function. If 2N® SmartGate UMTS receive DTMF dialing corresponding to filled code during UMTS/GSM - FXO call, it generates FLASH to FXO interface.

Setting options: *0-4 characters (0-9,*,#)*
Default setting: *blank*

FLASH length [ms] **Function No.: 241**

Time of current loop interruption (line On-Hook) during FLASH.

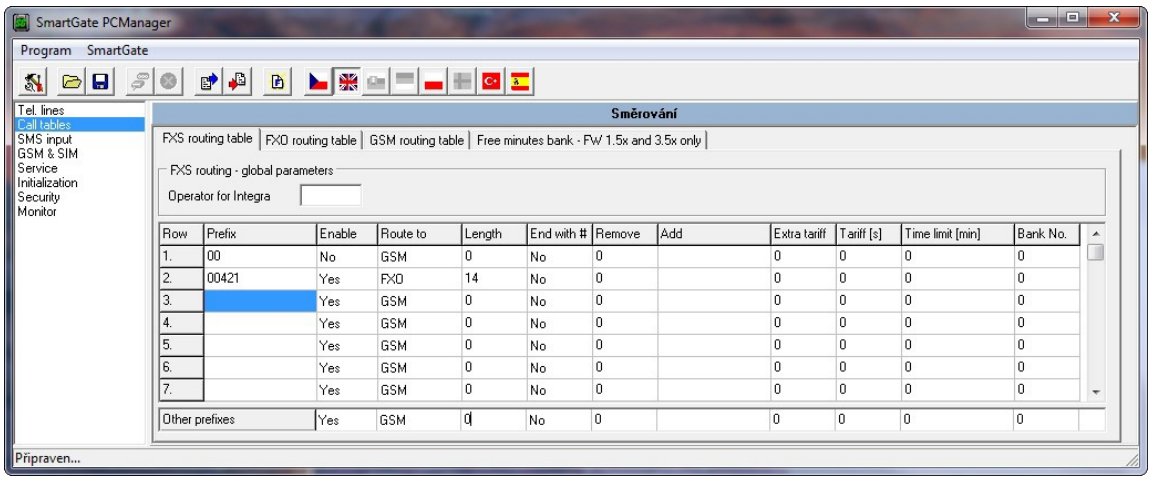
Setting options: *100-1500 ms*
Step: *100 ms*
Default setting: *100 ms*

FXS routing table parameters

All parameters related to the dialed number and call routing are arranged in three routing tables. Each table pertains to one interface: FXS, FXO and GSM(UMTS).

According to the prefix of dialed number on FXS interface you can:

- Bar the number to be dialed - the calling subscriber tone;
- Route the call to UMTS/GSM network, or to PBX through the FXO interface;
- Accelerate connection establishing by knowing the number length for the given prefix;
- Accelerate connection establishing by allowing to terminate dialing with a #;
- Modify the number to be dialed by removing and/or adding prefix.
- Set tariff metering for the given prefix
- Set time limit for call



Every table line includes a phone number prefix (of variable length) and other parameters. The parameters define SmartGate UMTS's behavior in case the beginning of the dialed number matches this prefix on the same table row. The table contains 120 rows for up to 120 different prefixes.

There may be exceptions to the rule - a number may start with the same digits but has to be served in a different way. Any table row that starts with the same prefix followed by one or more digits is considered an exception of the line with shorter prefix.

Remember to complete the "Other prefixes" line for a number whose prefix is not found in the table.

An example in the figure shows how to bar all international calls with the exception of calls to Slovakia. Calls to Slovakia are routed through FXO interface and the call is established immediately after 14 digits are dialed. All other calls are enabled and they are routed to UMTS/GSM network. Their tariff is one impulse every 30 second and you can accelerate connection establishing by dialing of a # after the dialed number. Maximal length of the call is 10 minutes.

Operator for Integra — Function No.: 405

In some UMTS/GSM networks you can add to dialed number # character and PBX subscriber number. Subscriber number is displayed on other side together with CLI. This parameter take place when dialed number doesn't contain # character. Common parameter for both FXO and FXS port.

Setting options: 0-8 characters (0-9)

Default setting: blank

Caution!

- Configuration using phone line programming (DTMF) is applicable for line 'Other prefixes' only.

Prefix — Function No.: -

Dialed number prefix identifying the call type. "Other numbers" line is used for calls with prefixes that are not included in the table.

Setting options: *0-16 characters (0-9,*,#)*
Default setting: *blank*

Call enable — Function No.: 391

This parameter allows/bars calls with corresponding prefixes.

Setting options: *YES(1)/NO(0)*
Default setting: *YES*

Route to — Function No.: 392

The Route to parameter defines call routing corresponding to the row.

Setting options: *GSM(0) – call is routed only to UMTS/GSM*
FXO(1) - call is routed only to FXO interface
GSM, FXO(2) – call is primary routed to UMTS/GSM and by GSM error is routed to FXO interface
FXO, GSM(3) – call is primary routed to FXO interface and by FXO error is routed to UMTS/GSM network
Default setting: *GSM*

Number length — Function No.: 393

The parameter defines the expected length of dialed number. It enables to start dialing into UMTS/GSM or FXO interface immediately after the last digit is dialed. If the telephone number to be dialed is shorter, a timeout is respected. The "0" setting means that the function is disabled.

Setting options: *0, 3-15*
Setting step: *1*
Default setting: *0*

End with # — Function No.: 394

This parameter enables to establish the call when a # is received. The # character is removed from the dialed number. If a # should be part of the dialed number, this function cannot be used for the given prefix.

Setting options: *YES(1)/NO(0)*
Default setting: *NO*

Remove — Function No.: 395

The Remove parameter is used for automatic call routing. A defined count of digits (prefix) is removed from the number beginning.

Setting options: *0-20*
Setting step: *1*
Default setting: *0*

Add Function No.: 396

The Add parameter is used for automatic call routing. A defined string (prefix) is added to the beginning of the number to be dialed.

Setting options: *0-16 characters (0-9,*,#,+)*

Default setting: *blank*

Extra tariff Function No.: 397

Pseudo tariff metering setting (tariff is based on call duration) for UMTS/GSM calls. Connected PBX must send tariff metering pulses for FXO calls. The Extra tariff parameter defines transmitting of fixed quantity of tariff pulses after call start. This parameter sets minimal call cost.

Setting options: *0-255*

Setting step: *1*

Default setting: *0*

Tariff [s] Function No.: 398

Pseudo tariff metering setting (tariff is based on call duration) for UMTS/GSM calls. Connected PBX must send tariff metering pulses for FXO calls. The Tariff parameter sets the call cost according to call duration. Set how often in seconds do you want to transmit pulses. Smaller number means more expansive call. 0 means not to transmit pulses according to call duration.

Setting options: *0-255 s*

Setting step: *1 s*

Default setting: *0 sFAX/DATA routing parameters*

Time limit [min] Function No.: 399

After time elapsing is call connection terminated immediately. You can hear beep 30s before end of call. 10s before end you can hear beep every second. The "0" setting means that the function is disabled.

Setting options: 0-255 min

Setting step: 1 min

Default setting: 0 min

FXO routing table parameters

All parameters related to the dialed number and call routing are arranged in three routing tables. Each table pertains to one interface: FXS, FXO and UMTS/GSM.

Calls from FXO interface are routed according to "FXO calls rote to" parameter. You can set 2N® SmartGate UMTS as DialThru gateway or as gateway for extension line of PBX.

You can program ME function for the DialThru gateway.

For gateway for extension line of PBX you can fill in the FXO routing table. According to the prefix of dialed number on FXO interface you can:

- Bar the number to be dialed – 2N® SmartGate UMTS hangs up, the call isn't established;
- Accelerate connection establishing by knowing the number length for the given prefix;

- Accelerate connection establishing by allowing to terminate dialing with a #;
- Modify the number to be dialed by removing and/or adding prefix.

The principle of table function is the same as in the FXS routing table. The call is controlled according to parameters on the row with dialed number prefix match. Remember to fill in the "Other prefixes" line for a number whose prefix is not found in the table.

FXO calls route to — Function No.: 400

The main parameter for FXO calls routing. You can program 2N® SmartGate UMTS as DialThru gateway, or as gateway for extension line of PBX.

DialThru gateway: Incoming ringing is immediately connected to FXS interface. If function ME set, 2N® SmartGate UMTS starts to establish UMTS/GSM call to ME number after defined number of rings. Routing table FXO is not active.

Gateway for extension line of PBX: 2N® SmartGate UMTS detects incoming ringing and Off-Hook the line after programmed number of rings, if it is possible to make call to UMTS/GSM. 2N® SmartGate UMTS generate dial tone and after dialing takes an action according to FXO routing table.

Setting options: *FXS - DialThru gateway (0)*
GSM - gateway for extension line of PBX (1)
Default setting: *FXS - DialThru gateway*

ME number — Function No.: 401

If you program 2N® SmartGate UMTS as DialThru gateway, fill in telephone number for ME function. 2N® SmartGate UMTS starts to establish UMTS/GSM call to ME number after defined number of rings. Then you can receive incoming FXO call on telephone line or in UMTS/GSM network. Blank parameter disables ME function.

Setting options: *0-16 characters (0-9,*,#,+)*
Default setting: *blank*

Number of rings to ME — Function No.: 402

If you program 2N® SmartGate UMTS as DialThru gateway and ME number is filled in, 2N® SmartGate UMTS starts to establish UMTS/GSM call to ME number after defined number of rings. Then you can receive incoming FXO call on telephone line or in UMTS/GSM network.

Setting options: *0-255*
Step: *1*
Default setting: *1*

Password for ME activation / disabling — Function No.: 403

If you program 2N® SmartGate UMTS as DialThru gateway and fill in ME number, function ME is active. If you fill in password for ME activation/disabling, you can activate/disable function ME without PC programming.

Off-Hook FXS line and dial PASSWORD plus (#) to disable the function.

Off-Hook FXS line and dial PASSWORD plus * to activate the function again.

Setting options: *0-8 characters (0-9)*
Default setting: *blank*

Operator for Integra — Function No.: 405

In some UMTS/GSM networks you can add to dialed number # character and PBX subscriber number. Subscriber number is displayed on other side together with CLI. This parameter take place when dialed number doesn't contain # character. Common parameter for both FXO and FXS port.

Setting options: *0-8 characters (0-9)*
Default setting: *blank*

DTMF code for On-Hook — Function No.: 409

Using this code, you can terminate call to UMTS/GSM network, if busy tone detection on 2N® SmartGate UMTS fails, or if connected equipment doesn't transmit busy tone.

Setting options: *0-8 characters (0-9,*,#)*
Default setting: *blank*

Caution

- Configuration using phone line programming (DTMF) is applicable for line 'Other prefixes' only.

Prefix — Function No.: -

Dialed number prefix identifying the call type. "Other numbers" line is used for calls with prefixes that are not included in the table.

Setting options: *0-16 characters (0-9,*,#)*
Default setting: *blank*

Call enable — Function No.: 491

This parameter allows/bars calls with corresponding prefixes.

Setting options: *YES(1)/NO(0)*
Default setting: *YES*

Number length — Function No.: 493

The parameter defines the expected length of dialed number. It enables to start dialing into UMTS/GSM or FXO interface immediately after the last digit is dialed. If the telephone number to be dialed is shorter, a timeout is respected. The "0" setting means that the function is disabled.

Setting options: *0, 3-15*
Setting step: *1*
Default setting: *0*

End with # Function No.: 494

This parameter enables to establish the call when a # is received. The # character is removed from the dialed number. If a # should be part of the dialed number, this function cannot be used for the given prefix.

Setting options: *YES(1)/NO(0)*
Default setting: *NO*

Remove FunctionNo.: 495

The Remove parameter is used for automatic call routing. A defined count of digits (prefix) is removed from the number beginning.

Setting options: *0-20*
Setting step: *1*
Default setting: *0*

Add Function No.: 496

The Add parameter is used for automatic call routing. A defined string (prefix) is added to the beginning of the number to be dialed.

Setting options: *0-16 characters (0-9,*,#,+)*
Default setting: *blank*

Time limit [min] Function No.: 499

After time elapsing is call connection terminated immediately. You can hear beep 30s before end of call. 10s before end you can hear beep every second. The "0" setting means that the function is disabled.

Setting options: 0-255 min
Setting step: 1 min
Default setting: 0 min

UMTS/GSM routing table

All parameters related to the dialed number and call routing are arranged in three routing tables. Each table pertains to one interface: FXS, FXO and UMTS/GSM.

Incoming calls from UMTS/GSM contain the CLI. According to received CLI 2N® SmartGate UMTS can do following:

- Reject the call;
- Route the call to FXS or FXO interface;
- Automatic dial in. 2N® SmartGate UMTS dials preprogrammed PBX subscriber number (for example switchboard operator) to be connected with calling UMTS/GSM subscriber.

FXS line Off-Hook to DISA timeout [ms] Function No.: 500

Timeout between FXS line Off-Hook and automatic dial in according to parameter "Dial in" in the table.

Setting options: *100-25500 ms*
Setting step: *100 ms*
Default setting: *2000 ms*

FXO line Off-Hook to dial-in timeout [ms] Function No.: 501

Timeout between FXS line Off-Hook and automatic dial in according to parameter "Dial in" in the table.

Setting options: *100-25500 ms*
Setting step: *100 ms*
Default setting: *1000 ms*

Max. ring time for CallBack Function No.: 502

Parameter sets up a behaviour for CallBack function. You've got 2 options how to use a Callback on the FXS port:

Simple CallBack - set up for 0. During an incoming call the FXS port gives a ringing. When the FXS port is off-hooked an incoming call from UMTS/GSM is rejected and after 10s the gateway calls back the UMTS/GSM number. During those 10s the caller must hang up to be ready for answering the callback call. On the FXS port a melody is played.

Advanced Callback - set up for 1-255. During an incoming call the FXS port gives a ringing. If the caller wants to use a callback functionality he/she must hang up before the parameter Max. ring time for Callback runs out. The gateway then calls back immediately. If the call is answered on the analog side earlier the called party hears the melody. If the call is answered on the UMTS/GSM side first then the calling party number hears the melody. If the caller doesn't want to use the Callback he just doesn't hang up and the call is handled as a standard incoming call.

Setting options: 0-255 s
Setting step: 1 s
Default setting: 5 s

FAX from UMTS/GSM route to Function No.: 509

Not supported in UMTS version.

DATA from UMTS/GSM route to Function No.: 508

Not supported in UMTS version.

Caution

- Configuration using phone line programming (DTMF) is applicable for line 'Other prefixes' only.

CLI – calling number Function No.: -

Fill in CLI, to route the call according to parameter on the same table line. It is possible to fill in only prefix for group of CLI's. If parameter "Substring" = 0, you must fill prefix as you see it on display of your mobile phone - It means inclusive of + and international prefix if they are included. If parameter "Substring" > 0, 2N® SmartGate UMTS searches filled prefix as substring of the received CLI, but max. to position given by "Substring" parameter. Positions are counted from zero. See examples in "Substring" parameter hint.

Setting options: *0-16 characters (0-9,*,#,+)*
Default setting: *blank*

Substring Function No.: -

Parameter is used to make filling CLI prefix easier. If parameter "Substring" > 0, 2N® SmartGate UMTS searches filled prefix as substring of the received CLI, but max. to position given by "Substring" parameter. Positions are counted from zero.

for example received CLI +420603198222 corresponds with settings:

CLI - calling number	**Substring**
+420603198222	any setting
+420603	any setting
+420	any setting
603198222	4, or more
603	4, or more

Setting options: *0-15*
Step: *1*
Default setting: *0*

Route to Function No.: 591

It is possible to route incoming UMTS/GSM call to FXS or FXO interface, or reject it. When the call is routed to FXS port you can use the CallBack feature. For correct functionality please set up "Max. ring time for Callback" parameter.

Setting options: *FXS -incoming call is routed to FXS*
FXO -incoming call is routed to FXO
FXS CallBack -incoming call is routed to FXS with CallBack functionality
reject -incoming call is rejected
Default setting: *FXS*

Dial in Function No.: 592

Parameter "Dial in" is used for automatic connection to switchboard operator, or directly to other subscriber. If this parameter is blank, calling person has telephone line fully at disposal and has to dial the subscriber number by DTMF. You can fill only # character to disable Integra function.

Setting options: *0-16 characters (0-9,*,#)*
Default setting: *blank*

Time limit [min] Function No.: 599

After time elapsing is call connection terminated immediately. You can hear beep 30s before end of call. 10s before end you can hear beep every second. The "0" setting means that the function is disabled.

Setting options: *0-255 min*
Setting step: *1 min*
Default setting: *0 min*

SMS Sending Input Parameters

Telephone number for SMS — Function No.:600

The telephone number to which an SMS is sent upon SMS input activation. If blank, the function is off.

Setting options: *0-16 characters (0-9,*,#,+)*
Default setting: *blank*

SMS text — Function No.: -

The SMS text to be sent to the preset telephone number. If the SMS text is blank, SMS with signal strength is sent.

Setting options: *0-40 characters*
Default setting: *blank*

Send if activated longer than [ms] — Function No.: 601

Set the SMS activation time necessary for SMS sending. This parameter prevents SMS sending in the event of short-time activation. If a "0" is selected, SMS is sent immediately upon the input activation.

Setting options: *0-25500 ms*
Setting step: *100 ms*
Default setting: *0 ms*

Timeout after sending [s] — Function No.: 602

Set the Time of inactivity after SMS sending. During this timeout no SMS is sent even if the SMS input gets activated. This prevents sending multiple SMS units in the case of repeated activation of the input.

Setting options: *0-2550 s*
Setting step: *10 s*
Default setting: *0 s*

GSM & SIM Parameters

UMTS/GSM operator lock — Function No.: -

Provider blocking is set by manufacturer in SmartGate UMTS. If 2N® SmartGate UMTS is blocked to a UMTS/GSM provider, no other UMTS/GSM provider's SIM card can be used. If an unacceptable SIM card is used, the UMTS/GSM module does not register to UMTS/GSM and the UMTS/GSM network LED flashes quickly on the 2N® SmartGate UMTS panel.

CLIR - incognito — Function No.: 701

Sets the calling line identification restriction (CLIR) for outgoing calls from SmartGate UMTS. Attention, before enabling it is necessary to activate this feature by UMTS/GSM operator, otherwise outgoing calls can be rejected by UMTS/GSM network.

Setting options: *-According to provider (0) - depending on how the function is selected in the UMTS/GSM network*
-Activation (1) - ID is not sent.
-Suppression (2) - ID is always sent.

Default setting: *According to provider*

Roaming enable/disable Function No.: 702

You can make 2N® SmartGate UMTS work even if it is registered to a foreign UMTS/GSM network.

Setting options: *-Disable (0) -The UMTS/GSM module logs out of a foreign network and attempts to register again in within 5 minutes.*
-Enable (1) - 2N® SmartGate UMTS works in any UMTS/GSM network.

Default setting: *Disable*

GPRS APN Function No.: -

GPRS APN (Access Point Name) for automatic setting.

Setting options: *0-40 characters*

Default setting: *blank*

Wireless network selection Function No.: -

Select the type of network used to connection.

Setting options: *UMTS+GSM, only UMTS, only GSM*

Default setting: *UMTS+GSM*

Call Handover workaround Function No.: 703

This parameter offers a workaround to prevent problems during call handover into the 1900 MHz (or 1800 MHz) band, caused by non-conforming configurations of the 1900 MHz (or 1800 MHz) UMTS/GSM network.

Setting options: *-Disable (0) - Disable workaround.*
-Enable (1) - Enable workaround. Select only when handover into a 1800/1900MHz band fails.

Default setting: *Disable*

Time period for low credit checking [h] Function No.: 710

Set to change time interval between credit checks. If your credit drops under defined value, 2N® SmartGate UMTS sends SMS "LOW CREDIT". The "0" setting means that the function is disabled.

Setting options: *0-255 h*

Step: *1 h*

Default setting: *0*

Code for credit checking Function No.: 711

Credit in prepaid SIM cards is checked by network function, which displays text message on mobile phone display. Code of network function must be terminated with "#" symbol.

ATTENTION - find out if you have to pay for this function. Every check can lower your credit.

Setting options: *0-8 characters (0-9,*,#,+)*
Default setting: *blank*

Minimal credit Function No.: 712

Set minimal credit value to send warning SMS "LOW CREDIT". If credit is lower then given value, warning SMS is send after every credit check, until you recharge your SIM card.

Setting options: *0-999*
Step: *1*
Default setting: *0*

Credit value position in received SMS Function No.: 713

If there are more numbers except credit value in text answer (e.g. date, time and so on) 2N® SmartGate UMTS seeks the number corresponding with credit value from given position in text. The seek algorithm skips every non-number character. If credit value is the first number in text you can leave setting 0. If there are other numbers before credit value, set parameter to text position, from which the algorithm will seek.

Setting options: *0-180*
Step: *1*
Default setting: *0*

Telephone number for service SMS Function No.: 714

Telephone number for service SMS. The number is common for GGMC SMS and "LOW CREDIT" SMS on prepaid SIM cards.

Setting options: *0-16 characters (0-9,*,#,+)*
Default setting: *blank*

Service Parameters

Hardware version Function No.: -

2N® SmartGate UMTS hardware version - for information only (cannot be modified). Must be used for communication with the manufacturer.

Firmware version Function No.: -

2N® SmartGate UMTS firmware version - 2N® SmartGate UMTS central processor program version. The manufacturer can issue upgrades to extend functions. To load new firmware into 2N® SmartGate UMTS use the Upgrade function. Keep communicating with the manufacturer.

Serial number Function No.: -

2N® SmartGate UMTS serial number - for information only (cannot be changed). Must be used for communication with the manufacturer.

UMTS/GSM operator lock **Function No.: -**

Refer to GSM & SIM Parameters.

Time period for GGMC SMS [h] **Function No.:970**

Time interval for GGMC SMS sending. GGMC = GSM Gateway Monitoring Centre. The "0" setting means that the function is disabled.

Setting options: *0-255 h*
Step: *1 h*
Default setting: *0*

Telephone number for service SMS **Function No.:714**

Telephone number for service SMS. The number is common for GGMC SMS and "LOW CREDIT" SMS on prepaid SIM cards.

Setting options: *0-16 characters (0-9,*,#,+)*
Default setting: *blank*

Initialization

All programmable parameters are arranged in tables according to their functions. You can initialize either all parameters at once or one table of parameters.

Telephone line initialization FXS **Function No.: -**

Initialization of all parameters necessary for the telephone line FXS.

Telephone line initialization FXO **Function No.: -**

Initialization of all parameters necessary for the telephone line FXO.

Call table initialization FXS **Function No.: -**

Initialization of all parameters related to FXS routing table.

Call table initialization FXO **Function No.:**

Initialization of all parameters related to FXO routing table.

Call table initialization GSM **Function No.: -**

Initialization of all parameters related to UMTS/GSM routing table.

Initialization of GSM & SIM **Function No.: -**

Initialization of all parameters related to the UMTS/GSM network and SIM card (except the PIN code).

SMS input initialization **Function No.: -**

Initialization of all parameters for SMS sending upon SMS input activation.

Global initialization Function No.: 999

Initialization of all 2N® SmartGate UMTS parameters including the PIN and service password.

Only Global initialization can be done by phone line programming. As parameter of this function service password followed by ✳ must be used. This operation isn't followed by confirmation tone. Successful setting is followed by pause (aprox.10s), during this time period is performed reset of configuration memory. Than is the gateway restarted.

Security Parameters

PIN – value Function No.: 700

Fill in the PIN value for automatic PIN entering upon 2N® SmartGate UMTS power up. It is applied only if the SIM card is PIN secured. If the given PIN fails to match the SIM, it is deleted automatically. If entered via a telephone line upon 2N® SmartGate UMTS start, the PIN is stored automatically.

Setting options: *0, 4-8 characters (0-9)*

Upon full initialization:blank

Service password Function No.: 900

Fill the service password for programming via a telephone line. Some parameters can be programmed by DTMF dialing and so the access to programming must be password-protected.

Setting options: *4-8 characters (0-9)*

Upon full initialization: *12345*

4 Function and Use

This section describes the basic and extending functions of the product **2N® SmartGate UMTS** .

Here is what you can find in this section:

- Voice function
- SMS Sending Input
- USB – monitoring, internet, SMS
- SIM Card PIN protection.

4.1 Voice function

Outgoing and incoming call establishing procedures is for illustration described for analog phone connected to FXS interface and extension line of PBX connected to FXO interface on SmartGate UMTS. In case of other equipment connection, please check SmartGate UMTS's function by connecting a phone.

Suppose that a SIM card has been inserted, the PIN code entered or not required, the antenna connected and 2N® SmartGate UMTS registered to UMTS/GSM network – the UMTS/GSM network LED is permanently on and you can hear the dial tone upon line off-hook.

DialThru gateway

Extension line of PBX is connected to FXO interface and phone is connected to FXS interface on SmartGate UMTS.

Outgoing call on FXS interface

1. Hook off the telephone, you can hear the dial tone and the Line LED starts flashing.
2. Dial the required subscriber number. 2N® SmartGate UMTS receives tone dialing (DTMF) by default. If your telephone transmits pulse dialing only, program 2N® SmartGate UMTS to receive pulse dialing. The delay between dialed digits may not exceed 5 s (programmable parameter). The number is evaluated as complete after this timeout.
3. A short delay follows the last-dialed digit for 2N® SmartGate UMTS to await further dialing. Then, the dialing end is signaled and connection is established.
4. Prefix of dialed number is compared with filled rows of FXS routing table. The call is rejected, routed to UMTS/GSM network or to FXO interface according to the routing table.
5. If the called subscriber is available, you can hear the ringing tone. If not, you can hear the busy tone or any of the UMTS/GSM provider's messages.
6. When the called subscriber answers the call, a call is established. The Line LED is permanently on during the call (Orange for calls to UMTS/GSM. Green-Orange alternate for FXS-FXO calls).
7. Hang up to terminate the call. The Line LED goes off. If the called subscriber hangs up first, you can hear the busy tone.

Incoming call from UMTS/GSM network

1. The CLI is compared with filled rows of GSM routing table. The call is rejected, routed to FXS interface – connected phone, or to FXO interface according to the routing table. Routing to FXO interface isn't usually used in case of DialThru gateway.
2. Ringing on FXS interface signals incoming call. The Line LED flashes during ringing. If programmed so, 2N® SmartGate UMTS transmits the CLIP by FSK between the first and second rings. Advanced telephone sets are able to display the CLI.
3. Hook off the phone to establish the call. The Line LED is permanently on during the call.

4. Hang up to terminate the call. The Line LED goes off. If the called subscriber hangs up first, you can hear the busy tone.

Incoming call on FXO interface

1. 2N® SmartGate UMTS detects a ringing signal and immediately interconnects it to FXS interface – the phone starts to ring.
2. The CLIP transmitting must provide connected PBX.
3. If you hook off the phone the call is established.

Gateway for extension line of PBX

Extension line of PBX is connected to FXO interface on SmartGate UMTS. FXS interface remains unconnected.

You have to program parameter "FXO call route to" for proper function on FXO interface. You can fill in some rows in FXO routing table to reject given calls, for automatic call routing etc.

Fill in GSM routing table to route an incoming UMTS/GSM calls to FXO interface.

It is necessary to set up conditions for call-disconnect detection from PBX. If 2N® SmartGate UMTS detects busy tone or continuous tone from PBX, it disconnects the established UMTS/GSM call.

Outgoing call on FXO interface

1. 2N® SmartGate UMTS detects a ringing signal from PBX and, if it is possible to establish UMTS/GSM call, it hooks off the line after preprogrammed number of rings. 2N® SmartGate UMTS transmits dial tone and green LED for line starts flashing.
2. Dial the UMTS/GSM subscriber number using DTMF. The delay between dialed digits may not exceed 5 s (programmable parameter). The number is evaluated as complete after this timeout.
3. A short delay follows the last-dialed digit for 2N® SmartGate UMTS to await further dialing. Then, the dialing end is signaled and connection is established.
4. Prefix of dialed number is compared with filled rows of FXO routing table. The call is rejected or routed to UMTS/GSM network according to the routing table.
5. If the called subscriber is available, you can hear the ringing tone. If not, 2N® SmartGate UMTS hangs up.
6. When the called subscriber answers the call, a call is established. The green Line LED is permanently on during the call.
7. Hang up to terminate the call. PBX sends busy tone to SmartGate UMTS's subscriber line, 2N® SmartGate UMTS detects it and disconnects the UMTS/GSM call.

Incoming call from UMTS/GSM network

1. The CLI is compared with filled rows of GSM routing table. The call is rejected, or routed to FXO interface – extension line of PBX according to the routing table.
2. 2N® SmartGate UMTS hooks off the line. If there is filled in the "Dial in" parameter for given CLI, 2N® SmartGate UMTS dials it using DTMF.

3. The UMTS/GSM subscriber hears the ringing tone from PBX if the automatic dial in function was applied, if not he hears dial tone from PBX and he can dial required extension himself.
4. The call termination is the same as in case of outgoing call.

Gateway for trunk line of PBX

Outgoing and incoming call establishing procedures is for illustration described for analog phone connected to FXS interface. The rules for call establishing in case of trunk line connection are the same, you have to program your PBX to route UMTS/GSM calls to SmartGate UMTS. We strongly recommend to check SmartGate UMTS's function by connecting a phone in case of interconnection with PBX trunk line.

Outgoing call on FXS interface

1. Hook off the telephone, you can hear the dial tone and the orange Line LED starts flashing.
2. Dial the required UMTS/GSM subscriber number. 2N® SmartGate UMTS receives tone dialing (DTMF) by default. If your telephone transmits pulse dialing only, program 2N® SmartGate UMTS to receive pulse dialing. The delay between dialed digits may not exceed 5 s (programmable parameter). The number is evaluated as complete after this timeout.
3. A short delay follows the last-dialed digit for 2N® SmartGate UMTS to await further dialing. Then, the dialing end is signaled and connection is established.
4. Prefix of dialed number is compared with filled rows of FXS routing table. The call is rejected, or routed to UMTS/GSM network according to the routing table.
5. If the called subscriber is available, you can hear the ringing tone. If not, you can hear the busy tone or any of the UMTS/GSM provider's messages.
6. When the called subscriber answers the call, a call is established. The orange Line LED is permanently on during the call.
7. Hang up to terminate the call. The Line LED goes off. If the called subscriber hangs up first, you can hear the busy tone.

Incoming call from UMTS/GSM network

1. The CLI is compared with filled rows of UMTS/GSM routing table. The call is rejected, or routed to FXS interface – connected phone according to the routing table.
2. Ringing on FXS interface signals incoming call. The orange Line LED flashes during ringing. If programmed so, 2N® SmartGate UMTS transmits the CLIP by FSK between the first and second rings. Advanced telephone sets are able to display the CLI.
3. Hook off the phone to establish the call. The Line LED is permanently on during the call.
4. Hang up to terminate the call. The Line LED goes off. If the called subscriber hangs up first, you can hear the busy tone.

Automatic Call ("BabyCall")

If the BabyCall function is enabled on FXS interface, a pre-programmed timeout is counted down after off-hook. If you don't start dialing within this timeout, 2N® SmartGate UMTS signals dialing end and starts to establish a call to the pre-programmed number using UMTS/GSM network automatically – from now 2N® SmartGate UMTS behaves as if a standard outgoing call to UMTS/GSM had been established. Any dialing during the BabyCall timeout cancels this function and a standard outgoing call can be made.

ME- Mobility Extension

ME function takes place during ringing on FXS interface if 2N® SmartGate UMTS is programmed as DialThru gateway.

Fill in telephone number for ME function and number of rings to ME function start on FXO routing table sheet.

1. 2N® SmartGate UMTS detects a ringing signal and immediately interconnects it to FXS interface – the phone starts to ring.
2. If there is no call connection before the pre-programmed number of rings, 2N® SmartGate UMTS simultaneously establishes call to UMTS/GSM network. Some timeout take place between UMTS/GSM call establishing start and ringing of mobile phone.
3. As long as 2N® SmartGate UMTS detects ringing on FXO interface, connected analog and UMTS/GSM phones ring.
4. You can receive the call on analog line as well as on your mobile phone.
5. During call received on mobile phone you can send FLASH to PBX, for special PBX functions, by preprogrammed DTMF code.

If you want repeatedly temporarily disable and afterwards enable the ME function, fill in Password for ME activation/disabling. If password is filled in:

1. Hook off the phone.
2. For temporarily disabling the function dial the password and confirm by #
   For activation the function dial the password and confirm by *.
3. Hang up.

Tariff pulses 16 or 12 kHz

2N® SmartGate UMTS has tariff pulse transmitter on FXS interface. You can use tariff pulses for outgoing call pricing. 2N® SmartGate UMTS offer pseudotariff only – tariff metering doesn't correspond to real price of call, tariff pulses are transmitted according to programmed parameters and call duration. You must program specific parameters in FXS routing table to set tariff metering for different prefixes of dialed numbers. Tariff metering is transmitted only during calls to UMTS/GSM network. Connected PBX must provide the tariff metering during calls to FXO interface.

You can also program 2N® SmartGate UMTS to transmit tariff pulses as call connect/disconnect signaling if your PBX cannot receive telephone line polarity reversal signaling.

Configuration of network services

2N® SmartGate UMTS provides some of network services to improve possibility of usage. The configuration is done by standard Star-Hash codes you can know from mobile phones.

To configure these services:

1. Hook off the telephone, you can hear the dial tone.
2. Enter the Star-Hash code described below.
3. Wait for information tone. You may wait about 3 seconds.
4. Hook on.

Information tones:

Confirmation - OK: ♪♪

- Confirms that the service was configured correctly.

Confirmation - bad: ♪♪♪♪♪

- Service was not correctly configured
- Service isn't activated by your provider

Confirmation - service activated: ♪♪♪

- Confirms that the service was configured correctly and the service is activated.

Confirmation - service deactivated: ♪♪♪

- Confirms that the service was configured correctly and the service is deactivated.

Call forwarding

For forwarding activation you must specify <Telephone number> the calls will be forwarded to. You may specify <Call type>, if you want to forward specified call type only. You may specify <Delay time> in seconds for forwarding if no answer too.

Description of <Call type> field codes:

Voice: 1 1

Data: 2 5

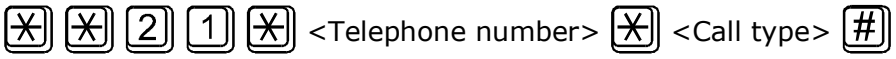
Fax: 1 3

Call forwarding unconditional

If activated, incoming calls will be always forwarded to the configured telephone number.

Activation for all call types:

Activation for selected call type:



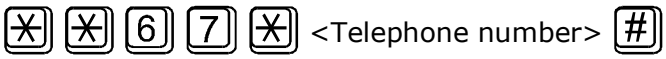
Deactivation:

Status check:

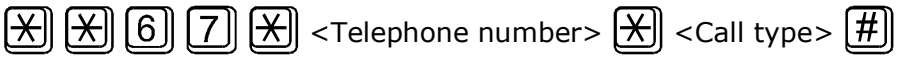
Call forwarding if busy

If activated, incoming calls will be forwarded to the configured telephone number if there is call in progress on SmartGate UMTS.

Activation for all call types:



Activation for selected call type:



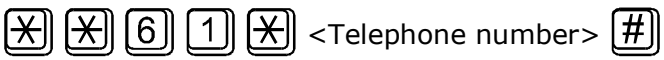
Deactivation:

Status check:

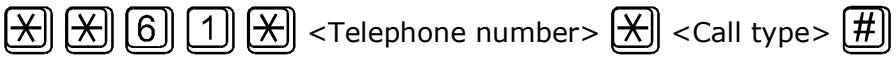
Call forwarding if no answer

If activated, incoming calls will be forwarded to the configured telephone number if incoming call isn't answered during specified timeout. Default timeout is 20 seconds.

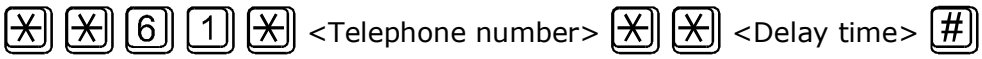
Activation for all call types:



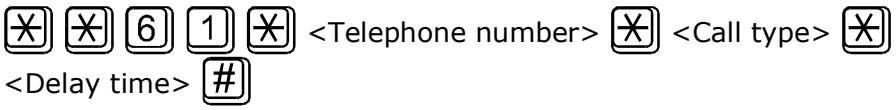
Activation for selected call type:



Activation for all call types and specified delay time:



Activation for selected call type and specified delay time:



Deactivation:

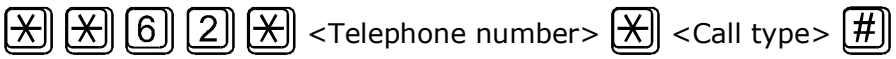
Status check:

Call forwarding if not accessible

If activated, incoming calls will be forwarded to the configured telephone number if your 2N® SmartGate UMTS is not accessible in the UMTS/GSM network.

Activation for all call types:

Activation for selected call type:



Deactivation:

Status check:

Call waiting

If the call waiting is activated the incoming call isn't refuse if there is call in progress on SmartGate UMTS. If there is the other incoming call during connected call it will be indicated by tone. See 0. for multiple calls management.

Activation:

Deactivation:

Status check:

Call hold

Check if your network supports the service before you use it.

This service relates to Call waiting described in 0. If there is call waiting on the line, you have more possibilities what to do. Every action is made by FLASH and DTMF code:

To terminate all held calls, or reject waiting call dial:

To terminating active call and accept the held or waiting call dial:

To place the active call on hold and accept the held or waiting call (switching between two calls) or

To place the active call on hold to have possibility to dial other outgoing call dial:

To place all held calls to active calls and set up conference call dial:

To connect the two calls (active and held) and disconnect the 2N® SmartGate UMTS from both calls dial:

4.2 SMS Sending Input

This universal input is intended especially for reporting alarm or error statuses of any equipment provided with the appropriate contact (a relay contact, e.g.).

By activating this input (electric input pin interconnection) you send one SMS to one pre-programmed telephone number.

Caution

- Do not use in life-supporting or property-protection applications because of the character of SMS service and 2N® SmartGate UMTS equipment. The manufacturer shall not be liable for health and property damage incurred as a result of SMS sending failure.

4.3 Data connection using USB

2N® SmartGate UMTS can be used as high speed wireless modem to connect your PC to internet. Technology HSDPA, UMTS. EDGE or GPRS are supported.

Connection to internet–Sierra Wireless module version

For Internet connection management is used program AirCard Watcher.

Internet connection setting

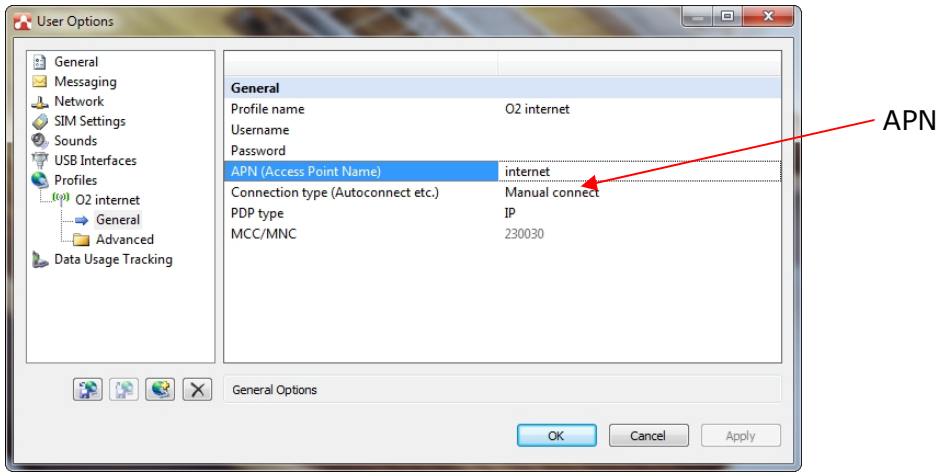
1. Install program 'Watcher_Generic_B2849.msi' from CD.

Note

- In some versions of Windows 7 is known bug, when runtime error connected with VBscript occurs, the bug must be fixed. Use Microsoft patch 'RegisterWindowsScriptEngine.msi', which is included on CD.

2. Connect 2N® SmartGate UMTS k PC using USB cable to PC ant switch it on.
3. The drivers will be installed automatically and the program AirCard Watcher starts.

4. Use button ***Connect*** for connection to internet. For the first run you will be asked to set profile for connection.
5. For profile setting you have to fill the name of profile and the Access point name – APN (e.g 'internet'). For some providers is necessary to set Username and Password. All this information are to be obtained from you internet provider.



6. Confirm the saving of your profile (OK). You will be connected to internet automatically.

SMS sending and receiving

Program ***AirCard Watcher*** supports sending and receiving SMS – select menu ***SMS Express***. Simple SMS application is activated.

Connection to internet – Simcom module version

USB driver installation

For communication over USB port of EasyGate is necessary to install USB driver. The installation is usually automatic after connection to USB port by delivered USB cable. The connection is described in detail in part 3.1 - "Installation and setting of EasyGate PCManager".

Internet connection

You can use the provider's installation wizard in case it supports the module used in gateway (Cinterion MC55i-w for GSM version, Simcom SIM5320E (A, J) for UMTS version). When this wizard is not available, you have to use manual setting according following instructions.

Module driver installation

For communication using module is necessary to install modem driver from CD-ROM Easy Gate.

Driver for MC55i-w on CD is named: 'mdm2n_vx.x.inf,x' (x – driver version).

Drivers for SIM5320 are available for 32 and 64 bits Windows systems, they are placed in appropriate directories.

APN setting

For internet connection is necessary to set the APN of your mobile provider. It could be set in gateway using PCManager (GSM&SIM - GPRS APN) or in modem extra settings in PC:

Example: at+cgdcont=1,"IP","internet.t-mobile.cz"

APN name must be received from your mobile provider, in example is the APN of T-Mobile Czech republic used.

Network connection setting

- Ask you mobile provider for Internet connection instructions because they can be different for each provider (especially the telephone number to be dialed, eventually Username, Keyword, DNS, etc.). Set phone connection in your PC using Network connection setting and select appropriate modem. Set the connection parameters (Username, Password, Dial number) according to information from your mobile provider (obviously Username 'internet', Keyword is empty an Dial number *99***1#). Finally use button 'Dial' to establish connection to internet.

Caution

- Mobile providers mostly specify the *99# number to be dialed for GPRS connection in their instructions. Cinterion GSM modules require the *99***1# format.

SMS sending and receiving

It is possible to send and receive SMS units using appropriate AT commands. There are a number of PC programs that are based on this principle. You can send and receive SMS even during EasyGate voice calls.

4.4 SIM Card PIN protection

If a SIM card is PIN-protected and the PIN is not programmed in SmartGate UMTS, UMTS/GSM LED indicates the state and the PIN tone is transmitted on telephone line.

PIN Entering by PCManager

Like other parameters, the PIN code can be entered using a PC programming tool. The PIN will be entered automatically upon every 2N® SmartGate UMTS power up.

PIN Entering via Telephone Line

PIN entering via a telephone line connected to FXS interface:

1. Hook off the phone, you can hear the PIN tone.
2. Enter the PIN using the DTMF. You can cancel the wrong PIN by entering of a #, or you can hang up before sending a *.
3. To confirm enter a *.
4. If you hear the busy tone in a while (a few seconds), you have entered the PIN correctly. Hang up and wait for registering to the UMTS/GSM network.
5. If you hear the PIN tone again in a while, you have entered a wrong PIN. Re-enter the PIN correctly.
6. If you hear the PUK tone in a while, you have entered a wrong PIN and the SIM card is blocked. Use the mobile phone to unblock the SIM card.

PIN entering via a telephone line connected to FXO interface if 2N® SmartGate UMTS is used as gateway for extension line of PBX:

1. Dial the SmartGate UMTS's extension number on your PBX. 2N® SmartGate UMTS detects ringing and after off hook generates the PIN tone.
2. Enter the PIN using the DTMF. You can cancel the wrong PIN by entering of a #, or you can hang up before sending a *.
3. To confirm enter a *.
4. If 2N® SmartGate UMTS after a while (a few seconds) hangs up, you have entered the PIN correctly.
5. If you hear the PIN tone again in a while, you have entered a wrong PIN. Re-enter the PIN correctly.
6. If you hear the PUK tone in a while, you have entered a wrong PIN and the SIM card is blocked. Use the mobile phone to unblock the SIM card.

A correctly entered PIN is stored in SmartGate UMTS's memory as if you had programmed it using the PCManager. The PIN will be entered automatically upon every 2N® SmartGate UMTS power up.

Automatic PIN Entering

You need not enter the PIN upon power up if it is stored in 2N® SmartGate UMTS – it is entered automatically. This function is useful in case of power failure; 2N® SmartGate UMTS is operable in a short time after power recovery without any intervention by the operating staff.

Caution!

- One PIN entering option is exhausted by the attempt to enter the PIN automatically upon SIM card or PIN change. If wrong, the automatically entered PIN is cleared from the internal memory to avoid another false attempt upon next power on. There are still two manual PIN-entering attempts after such unsuccessful automatic entering. To prevent the unsuccessful automatic PIN entering, delete or program properly the 2N® SmartGate UMTS PIN using the PCManager in the case of SIM card change.

5 Technical parameters

This section describes the technical parameters of the product **2N® SmartGate UMTS**.

5.1 Technical Parameters

Product versions

Sierra Wireless	Ordering numbers 501428x
Sierra Wireless backup version	Ordering numbers 501438x
Simcom	Ordering numbers 501448
Simcom backup verzion	Ordering numbers 501458x

Sierra UMTS/GSM

UMTS/GSM module, bandwidth	SL8082 – Euro version UMTS: 900/2100 MHz GSM/EGSM: 850/900/1800/1900 MHz SL8080 – US version UMTS 900/1900 MHz GSM/EGSM: 850/900/1800/1900 MHz
Transmission power	0,25W UMTS 900/1900/2100 MHz 2 W EGSM 850 / 900 MHz, 1W GSM 1800 / 1900 MHz
Receiver sensitivity	-108 dBm UMTS 900/1900/2100 MHz -106 dBm GSM 850/900/1800/1900 MHz
Audio	HR+FR+EFR Half rate+Full rate+Enhanced full rate Echo cancellation, Echo suppression, WDCMA AMR Adaptive Multirate
DATA	CSD max. 14.4 kbps;Coding scheme CS 1-4,MCS 1-9 GPRS Class 10, 4+2, max. 85.6 kbps EDGE Class 12, 4+2, max 236 kbps UMTS/HSDPA cat.8, MS Class A (Simultaneous Voice and Data), max 3,6Mbps downlink, 384 kbps uplink
Antenna	850/900/1800/1900/2100 MHz 50 Ω SMA antenna connector

SIM card	3V/1,8 plug-in

Simcom UMTS/GSM

UMTS/GSM module, bandwidth	SIM5320E – Euro version UMTS: 900/2100 MHz GSM/EGSM: 850/900/1800/1900 MHz SIM5320A – US version UMTS 850/1900 MHz GSM/EGSM: 850/900/1800/1900 MHz SIM5320J – Japanese version UMTS 850/2100 MHz GSM/EGSM: 850/900/1800/1900 MHz
Transmission power	0,25W UMTS 850/900/1900/2100 MHz 2 W EGSM 850 / 900 MHz, 1W GSM 1800 / 1900 MHz
Receiver sensitivity	-106 dBm
Audio	HR+FR+EFR (Half rate+Full rate+Enhanced full rate) Echo cancellation, Echo suppression
DATA	CSD max. 14.4 kbps GPRS Class 12, max. 85.6 kbps (DL), 42,8 kbps (UL) EDGE Class 12 max. 236,8 kbps (DL), 118 kbps (UL) WCDMA max. 384 kbps (DL), 384 kbps (UL) HSDPA max 3,6 Mbps (DL)
Antenna	850/900/1800/1900/2100 MHz 50 Ω SMA antenna connector
SIM card	3V/1,8 plug-in

Power Supply

DC power supply	10 to 16 V DC (accumulator 12V)
12V consumption	Standby 100 mA Call/data max. 500 mA
Supply connector	DC Jack 5,5/2,1 mm positive to center
Power source must meet the criteria for SELV standard	

Battery backup (optional)

Accumulator type	Charging cell NiMh size AA
Number of pieces	4
Power consumption from batteries	Standby 300 mA Call/data max. 1200 mA
Charging current	Typ. 60 mA, max 120 mA, regulated
Accumulators are not part of delivery	

Telephone Interface FXS (for PBX external line or phone set)

Interface type	2-wire analog, FXS
Telephone connector type	RJ 12, 6/2
Line impedance	600 Ω
Loop voltage on hook	48 V DC
Loop current	max. 40 mA
Loop resistance	max. 800 Ω
Tone frequency	adjustable, default 425 Hz
Dialing type	tone (DTMF) or pulse
Ringing voltage	42 Vrms 50/25 Hz
Calling line identification	CLI during ringing according to ETSI FSK
Tariff pulses	f=16/12 kHz ; Umin=100 mVef on 200 Ω
Answer supervision	polarity reversal, 12/16 kHz pulses

Telephone Interface FXO (for PBX extension line)

Interface type	2-wire analog, FXO
Telephone connector type	RJ 12, 6/2
Line impedance	Zr (TBR21) or 600 Ω (According to model of Gateway)
On-hook DC resistance	1 MΩ
Off-hook line current	10 - 65 mA
Off-hook line voltage (typ.)	4,5 V for 25 mA
Dial tone frequency	adjustable, default 425 Hz
Dialing type	tone (DTMF)
Ringing voltage	Min. 20 Vrms 25-50 Hz
Ringing impedance	4 - 10 kΩ / 50 Hz

Dial thru parameters

Voltage drop (typ.)	1,7V / 25 mA
Closed loop resistance (typ.)	6 Ω

SMS Sending Input

Closed loop resistance	max. 1 kΩ
Open loop resistance	Min. 25 kΩ
Input overvoltage protection	max. +/- 12 V

Data Interface

Interface type	USB 2.0
Connector	USB type B

Others

Dimensions (w/o connectors)	170 x 130 x 45 mm
Operating temperature	0°C to 45°C
Operating status signaling	4 LEDs (on, UMTS/GSM network, line, data) Signal strength indicator

6 Supplementary Information

This section describes supplementary information of the product **2N® SmartGate UMTS**.

Here is what you can find in this section:

- Regulations and directives
- Troubleshooting
- List of Abbreviations
- General Instructions and Cautions.

6.1 Regulations and directives

2N® SmartGate UMTS conforms to the following directives and regulations:

- Directive 1999/5/EC of the European Parliament and of the Council, of 9 March 1999 – on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity
- Directive 2006/95/EC of the European Parliament and of the Council of 12 December 2006 on the harmonisation of the laws of Member States relating to electrical equipment designed for use within certain voltage limits
- Directive 2004/108/EC of the European Parliament and of the Council of 15 December 2004 on the approximation of the laws of the Member States relating to electromagnetic compatibility and repealing Directive 89/336/EEC
- Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003 on waste electrical and electronic equipment
- Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC
- Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment

6.2 Troubleshooting

For tips for the solution of other potential problems see faq.2n.cz.

No LED is on after power up

- Check the power supply.

All LEDs are on. No call is currently in progress.

- 2N® SmartGate UMTS is in the special PCManager-based programming mode - exit the PCManager to reset SmartGate UMTS
- Try to switch 2N® SmartGate UMTS off and on, the LEDs should go off in 3s and signal the status of SmartGate UMTS

2N® SmartGate UMTS does not register to UMTS/GSM

- Check the SIM card.
- Check the PIN.
- Check the antenna connection.
- Select a place with a good UMTS/GSM signal.

No tone can be heard after line off-hook

- Check the telephone line connection.
- 2N® SmartGate UMTS is not initialized properly upon start (approx. 10s after power up).
- 2N® SmartGate UMTS is not supplied with power.

2N® SmartGate UMTS keeps transmitting a tone during dialing, not receiving the dialing

- Select the correct dialing type (DTMF or pulse).

Voice disturbance on telephone lines during UMTS/GSM call

- Check signal strength using PCManager monitor. Place 2N® SmartGate UMTS to place with good UMTS/GSM signal.
- Check distance between telephone lines and SmartGate UMTS's antenna. Distance between antenna and other telecommunication systems should be as long as possible.
- If there are still problems, use the antenna with coax cable.

2N® SmartGate UMTS does not communicate with PC

- Check the serial cable connection.
- Check the COM number setting on PC.
- Check the COM parameters (1200-115200 bps, 8N1).
- 2N® SmartGate UMTS is not registered to UMTS/GSM network.
- A dialing or outgoing call establishing process takes place on SmartGate UMTS.
- An incoming call is ringing on SmartGate UMTS.

6.3 List of Abbreviations

- **APN** (Access Point Name)
  Necessary for the GPRS service.
- **CLIP** (Calling Line Identification Presentation)
- **CSD** (Circuit Switched Data)
- **COM**
  A PC Serial port.
- **DTMF** (Dual Tone MultiFrequency)
  Tone dialling.
- **FSK** (Frequency Shift Keying)
  A transmission protocol using variable signal frequencies for logic level encoding.
- **FXO**
  An interface electrically identical with a standard telephone (opposite side = FXS interface).
- **FXS**
  A telephone interface allowing a standard telephone connection (opposite side = FXO interface).
- **FW** (Firmware)
  Similar to SW, a term for the central microprocessor program.
- **GSM** (Group Switched Mobile system)
  The present-day standard digital mobile telephone network.
- **GPRS** (General Packet Radio Service)
  High-speed data transmission for UMTS/GSM networks.
- **HW** (Hardware)
  An electronic device, circuit, board, component, etc. in this context.
- **P(A)BX** (Private (Automatic) Branch Exchange)
- **PC** (Personal Computer)
  A personal computer based on the IBM PC standard.
- **PIN** (Personal Identification Number)
  A SIM card securing password.
- **PSTN**
  Public Switched Telephone Network.
- **PUK** (Personal Unblocking Key)
  A password used for releasing a blocked SIM card after repeated wrong PIN entering.
- **RS-232C**
  A PC serial port standard.
- **SIM** (Subscriber Identity Module)
  A chip-equipped module to be inserted in a UMTS/GSM device for identification.
- **SmG**
  2N® SmartGate UMTS

- **SMS** (Short Message Service)
  A term for the system and one unit (message).
- **SW**
  Software.
- **TTL** (Transistor-Transistor Logic)
  A standard digital technology defining voltage for levels 0 and 1.
- **PSTN**
  Public Switched Telephone Network
- **UMTS** (Universal Mobile Telecommunications System)
- **WCDMA**
  Wideband Code Division Multiple Access – technology of wireless transmitting in UMTS network, allows higher data transmit rate than

6.4 General Instructions and Cautions

Please read this User Manual carefully before using the product. Follow all instructions and recommendations included herein.

Any use of the product that is in contradiction with the instructions provided herein may result in malfunction, damage or destruction of the product.

The manufacturer shall not be liable and responsible for any damage incurred as a result of a use of the product other than that included herein, namely undue application and disobedience of the recommendations and warnings in contradiction herewith.

Any use or connection of the product other than those included herein shall be considered undue and the manufacturer shall not be liable for any consequences arisen as a result of such misconduct.

Moreover, the manufacturer shall not be liable for any damage or destruction of the product incurred as a result of misplacement, incompetent installation and/or undue operation and use of the product in contradiction herewith.

The manufacturer assumes no responsibility for any malfunction, damage or destruction of the product caused by incompetent replacement of parts or due to the use of reproduction parts or components.

The manufacturer shall not be liable and responsible for any loss or damage incurred as a result of a natural disaster or any other unfavourable natural condition.

The manufacturer shall not be held liable for any damage of the product arising during the shipping thereof.

The manufacturer shall not make any warrant with regard to data loss or damage.

The manufacturer shall not be liable and responsible for any direct or indirect damage incurred as a result of a use of the product in contradiction herewith or a failure of the product due to a use in contradiction herewith.

All applicable legal regulations concerning the product's installation and use as well as provisions of technical standards on electric installations have to be obeyed. The manufacturer shall not be liable and responsible for damage or destruction of the product or damage incurred by the consumer in case the product is used and handled contrary to the said regulations and provisions.

The consumer shall, at its own expense, obtain software protection of the product. The manufacturer shall not be held liable and responsible for any damage incurred as a result of the use of deficient or substandard security software.

The consumer shall, without delay, change the access password for the product after installation. The manufacturer shall not be held liable or responsible for any damage incurred by the consumer in connection with the use of the original password.

The manufacturer also assumes no responsibility for additional costs incurred by the consumer as a result of making calls using a line with an increased tariff.

Electric Waste and Used Battery Pack Handling

Do not place used electric devices and battery packs into municipal waste containers. An undue disposal thereof might impair the environment!

Deliver your expired electric appliances and battery packs removed therefrom to dedicated dumpsites or containers or give them back to the dealer or manufacturer for environmental-friendly disposal. The dealer or manufacturer shall take the product back free of charge and without requiring another purchase. Make sure that the devices to be disposed of are complete.

Do not throw battery packs into fire. Battery packs may not be taken into parts or shirt-circuited either.

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